UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

**MEMORANDUM**

**DATE:** July 13, 1998

**SUBJECT:** Review of the *Draft* Quality Assurance Project Plan (QAPP) for the PRP-Lead Site Investigation (SI) Activities for the Fansteel, Inc. at Number One Tantalum Place, North Chicago, Illinois

**FROM:** Richard L Byvik Richard L Byvik
Field Services Section (FSS)

**TO:** John J. O'Grady
Remedial Project Manager

We have reviewed the *draft* QAPP for the PRP-Lead SI activities for the Fansteel, Inc., Number One Tantalum Place, North Chicago, Illinois, and determined that the subject QAPP is not acceptable. The subject QAPP was received by FSS on May 6, 1998, Log-in # 2407.

Attached to this memorandum are FSS comments and recommendations that describe the deficiencies and provide guidance for their resolution. Standard Operating Procedures (SOPs) must be provided by the project laboratory **Great Lakes Analytical** and **Carlson Environmental, Inc.** should provide the field SOPs.

If there are any questions regarding this memorandum, contact Richard Byvik (312.353.3114) of the FSS Staff.

Attachment

cc: Steve Ostrodka, SMF-4J
Bill Bolen, SR-6J

# Fansteel, Inc.
# North Chicago, Illinois

## SITE INVESTIGATION WORK PLAN (SI/WP)

### I. 3.0 FOCUS OF SITE INVESTIGATION

A. Section 3.1 VOCs
Provide table(s) listing the project required **volatile organic compounds (VOCs)** and the project required method detection limits (MDLs), practical quantitation limits (PQLs), or reporting limits (RLs) for both soil and groundwater. Include the site remediation objectives for soil and groundwater.

B. Section 3.2 Metals
1) Provide table(s) listing the project required **Metals** and the project required MDLs, PQLs, or RLs for soil and groundwater.
2) Provide table(s) listing the project required **Metals** and **CN**, and the project required MDLs, PQLs, or RLs for creek sediment.
3) Include the site remediation objectives for soil, groundwater, and creek sediment.

C. Section 3.3 PCBs
Provide table(s) listing the project required **PCBs** and the project required MDLs, PQLs, or RLs for creek and ditch sediment. Include the site remediation objectives for creek and ditch sediment.

### II. 4.0 SITE-SPECIFIC SAMPLING PLAN

A. Section 4.2.3 Sediment-Sampling Locations
Discuss how sample locations will be selected if water is present or flowing in Pettibone Creek or the ditch.

B. Section 4.3.1 Soil-Sampling Methodology, pg 9

1) Discuss in more detail the collection of the VOC sample. Will the project laboratory **Great Lakes Analytical (GLA)** supply all the VOC vials containing the preservatives? Will the samples, about 5 g, be weighed in the field? Replicate samples should be collected, in case a reanalysis is needed and another sample vial is necessary for dry weight determination.
2) Sample vials should not contain both preservatives, ie, methanol and sodium bisulfate. The SW-846 Method 5035 specifies the preservative **sodium bisulfate**, not "sodium bicarbonate", as mentioned here.
3) Samples should be collected and tested for effervescence to determine if sodium bisulfate can be used as a preservative.

C. Section 4.3.2 Ground Water-Sampling Methodology, pg 9
Providing a diagram of the monitoring well is recommended.

D. Section 4.3.2 Ground Water-Sampling Methodology, pg 9

1) Bailers are not recommended for sampling.
2) Region V strongly recommends groundwater samples be collected unfiltered.
3) Groundwater field measurements of **pH**, **temperature**, and **conductivity** should be taken, too. Provide field SOPs for these parameters.
4) Groundwater VOC samples are preserved with hydrochloric or sulfuric acid to pH<2, not with "methanol".
5) Discuss VOC sample collection procedure, ie, full vial, no headspace. If bubbles are present, fill a new vial. Two vials are collected at each sampling location site and placed in a separate plastic bag.
6) Clarify, or delete, the last sentence. The samples for metals analysis can be filtered after digestion.

E. Section 4.3.3 Sediment-Sampling Methodology, pg 10

1) At the end of the 3rd sentence, replace "well" with <u>sediment sampling location</u>.
2) The <u>ditch sediment</u> samples are being tested for **PCBs** and **CN**. Will separate samples be taken for each test? The samples should be preserved at $4^{o}C$, also.

F. ATTACHMENT A

1) Include a Summary Table of the Matrices, Analysis, Sample Container, Preservation, and Holding Time Requirements. Include the **GLA** provided sample containers for the VOC soil samples.

2) Include a sample number summary table listing the matrices, laboratory parameters and field parameters, number of samples, field blanks, field duplicates, trip blanks, and MS/MSDs. This information could be incorporated into TABLE ONE.

G. 6.0 QUALITY ASSURANCE PROJECT PLAN (QAPP)

Superfund QAPPs should be prepared following the guidance in **REGION 5 SUPERFUND MODEL QUALITY ASSURANCE PROJECT PLAN, Revision 1, May 1996**, rather than the *Region 5 Model RCRA QAPP of May 1993*. Data Quality Objective (DQO) Levels have been eliminated for Superfund projects. The project DQOs should be itemized for each environmental data collecting activity. The reference to "Level II" should be eliminated. See QAPP Comment **II.** below.

# ATTACHMENT C
# QUALITY ASSURANCE PROJECT PLAN

## I. TITLE/SIGNATURE PAGE

Include a signature page with signature lines for all the responsible officials.

## II. INTRODUCTION

Superfund QAPPs should be prepared following the guidance in **REGION 5 SUPERFUND MODEL QUALITY ASSURANCE PROJECT PLAN, Revision 1, May 1996**. The QAPP should be prepared in Document Control format so revisions can be made without repaginating the entire QAPP. All 14 QAPP Elements should be addressed, however, the information that should be in the QAPP can be referenced from supporting documents, such as, the Work Plan, Field Sampling Plan, etc. The seven step DQO Process should be employed for each of the environmental data gathering activities to define their data requirements. This seven step process is described in **EPA QA/G-4** document and outlined in Figure 1-1 of the **Region 5 Model QAPP**.

The QAPP should include the **PROJECT DESCRIPTION** Element. Sections, subsections, tables, figures, and the Executive Summary in the SI/WP can be referenced for the introduction (executive summary) site description (2.1,2.1), past data collection activities (1.2), current status (2.4), project objectives (3.0,4.6,5.1), sample network design and rationale (4.0), and project schedule (5.3). Other sections may also apply.

## III. PROJECT ORGANIZATION AND RESPONSIBILITY

A. *Describe project responsibilities for the* **U.S. EPA Region 5 Remedial Project Manager** and the **U.S. EPA Region 5 Quality Assurance Reviewer**.
B. Include a Project Organization chart.
C. Reference SI/WP Section 5.4 for additional information.

## IV. QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

A. Section 3.0 pg 5
The DQO Levels are being eliminated. See Comment **II.** above.
Discuss the Quality Control (QC) criteria for the field measurements of pH, temperature, conductivity, and field screening with the FID/PID instrument.

B. Section 3.1 Precision
Indicate the project QC acceptance criteria for precision for the matrices and parameters given in SI/WP TABLE ONE.

C. Section 3.2 Accuracy
Indicate the project QC acceptance criteria for accuracy for the matrices and parameters given in SI/WP TABLE ONE. Tables in the SI/WP can be referenced.

D. Section 3.3 Completeness
Define the project completeness objective. The completeness objective is usually greater than 90%.

E. Include a section that discusses the Level of Quality Control Effort for field and laboratory analysis. Discuss the collection of MS/MSD samples for VOCs, Metals, and PCBs. Section 4.5 can be referenced.

## V. SAMPLING PROCEDURES

A. Section 4.2, item 1. Page 9
The sample containers should meet the requirements presented in the *Specifications and Guidance for Contaminant-Free Sample Containers* EPA 540/R-93/051. Describe the special containers, vials with preservatives methanol and sodium bisulfate, for the VOC soil samples provided by **GLA**. Reference SI/WP Section 4.3.1.

B. Section 4.3
See SI/WP Comments **II.** C. and D. above.

C. Section 4.5
For aqueous matrices field blanks must be collected for every 10, or fewer number of samples. Field blanks are allowed, but not required, for soil/sediment matrices.

## VI. CUSTODY PROCEDURES

A. Section 5.0
Provide copies of the chain-of-custody, sample labels, sample tags, and seals.

B. Stipulate the contents and location of the Final Evidence File.

## VII. EQUIPMENT CALIBRATION

A. Section 6.1
Describe the calibration procedures for the field measurement of pH, temperature, and conductivity. Reference the location of the field SOPs.

B. Section 6.2
Reference the location of the laboratory SOPs for the calibration of laboratory equipment.

## VIII. ANALYTICAL SERVICES

A. Section 7.0, typos
For cyanide amend EPA Method 9021, to **9012**.
For mercury amend EPA Method 7421, to **7471.**

B. Provide SOPs for the SW-846 Methods:
1) Method 8260B and soil preparation procedures (Method 5035) and aqueous preparation procedures (Method 5030B)
2) Method 8082 and soil/sediment preparation method 3540C/3550B and any cleanup procedures (methods 3600C)
3) Method 9012A
4) Method 7471A
5) Method 6010B and soil/sediment preparation method 3050B and aqueous preparation method 3005A/3010A
6) Methods 7060A, 7421, and 7740, and aqueous preparation methods 3020B, 7060A, and 7740.

C. The project metal **Tantalum** (**Ta**) will be analyzed by the Method 6010A. *This metal* **Ta** *is not included in the Method 6010A list.* Method performance studies must be conducted to verify that **Ta** can be analyzed at the project required concentration level.

D. Discuss the field measurement of pH, temperature, and conductivity and reference the location of the field SOPs.

## IX. INTERNAL QUALITY CONTROL

A. Section 8.1
Discuss the QC checks for field measurement of pH, temperature, and conductivity.

B. Section 8.2
Discuss the project required corrective actions. The SOPs provided by **GLA** should describe corrective actions for laboratory out of control events. See Comment **IV.** above.

C. Section 8.2, pg 19, last bullet
The SW-846 Method 8000B (Section 7.10.4) specifies that when sample results are confirmed using two dissimilar columns or detectors, the higher result must be reported. The project should discuss with **GLA** how this situation will be dealt with, if it arises.

## X. DATA REDUCTION, VALIDATION AND REPORTING

A. Section 9.1 Field Data
Discuss reduction procedures for pH, temperature, and conductivity.

B. Section 9.2 Laboratory Data
Itemize the project data reporting requirements expected from **GLA**. Specify the project QC acceptance criteria, used by the CEI QAO, for reviewing and validating analytical data from the laboratory.

C. Section 9.3 Performance/System Audit
This section is normally a separate QAPP Element entitled PERFORMANCE AND SYSTEM AUDITS. Include a provision that external field audits may be conducted by the U.S. EPA Region 5. Include a provision that external laboratory audits may be conducted by the U.S. EPA Region 5.

D. Section 9.4 Data Assessment
This section is normally a separate QAPP Element entitled SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS. Discuss and include equations used to assess Accuracy, Precision, and Completeness.

## XI. PREVENTATIVE MAINTENANCE

This QAPP Element was not included or addressed. Discuss preventative maintenance procedures for field instruments. The field SOPs can be referenced, if this information is found there. Discuss preventative maintenance procedures for laboratory instruments. The laboratory SOPs and **GLA** Quality Assurance Program (QAP) can be referenced, if this information is found there.

## XII. CORRECTIVE ACTION

Section 10.1, typo, 5th line
Amend QUQ, to **QAO**.

## XIII. QUALITY ASSURANCE REPORTS

Discuss in more detail the contents of the QA Report, the official that prepares this report, and the persons that receive this report.

## ATTACHMENT D
## Great Lakes Analytical Quality Assurance Program (QAP)

**A.** Section 5.1 Sample Containers and Preservation
Provide more discussion on the preparation of the sample containers used and supplied for this project, ie, the soil VOC sample vials with the preservatives methanol or sodium bisulfate. The preparation of the vials should be consistent with the SW-846 Methods 5030B and 5035. Sample collection instructions may be included.

**B.** Section 6.3 Sample Log-in
Provide more discussion on the internal chain-of-custody procedures.

**C.** Section 6.5 Sample Storage
The VOC samples should be stored separately from other samples, as well as standards and extracts.

**D.** Section 8.0 Analytical Quality Control
**Great Lakes Analytical** should provide the MDLs/PQLs/RLs (Section 8.4), the established accuracy control limits (Section 8.6.2), precision control limits (Section 8.6.3), and surrogate control limits (Section 8.6.4) for the analytical methods used in this project.